

ECONOMICS
SEMINAR

RAILROAD PIECE RATES

BY

HARRINGTON EMERSON

THE EMERSON COMPANY

NEW YORK

THE EMERSON COMPANY
EFFICIENCY ENGINEERS

NEW YORK
30 CHURCH STREET

PITTSBURGH
OLIVER BUILDING

CHICAGO
RAILWAY EXCHANGE

BARNES 6-8-18

331.2
Em 34r
cop. 2

LIBRARY
UNIVERSITY OF ILLINOIS
CHICAGO

RAILROAD PIECE RATES

Piece rates are a method of paying workers by the piece, by the weight, by distance, instead of by the year, month, day or hour.

Disagreements about the piece rate method of payment of railroad employes have recently brought all parts of the country to the brink of a great national disaster.

If for no other reason than this, piece rates are under suspicion as being a wholly undesirable and dangerous method of payment to workers.

In the wage period that came between forced or slave labor and modern industrial development, payment by the year, the month, the day was usual. It is still customary and more satisfactory between farmer and farm workers. The farmer knows for a day's work how many acres should be plowed, how many bushels of corn should be gathered, how many cows should be milked, how long it should take to drive a load of hogs to the shipping station. The farmer can make allowance for muddy or snow-drifted roads, for wet or dry fields. It is, moreover, a matter of indifference to him whether the worker uses a faster pace and fewer hours or a slower pace and more hours. It is the total output that counts.

When big shops came into existence, the intimate touch between employer and employe was lost. The owner of the shop often could not operate his own machine. He was only keenly aware, for instance, that a machine built to turn out 5,000 railroad spikes a day was delivering only 1,250. (He jumped to the conclusion that all mechanics were loafers on the job. He could find instances where some mechanics did loaf.) There are some loafers in all positions; those of shop owners included!

He therefore sought some new basis of payment. As he was paying the mechanic \$2.50 a day and getting 1,250 spikes, he concluded he would offer him a cent for ten spikes. If 2,500 a day could be turned out, the wage cost would be cut in half. If the machine turned out 5,000 a day, as the maker of the machine assured was possible, the mechanic would make \$5.00 a day.

This is the whole story of the beginning of piece rates. The workers, with correct instincts, violently objected. They were right. They called the piece rate method the invention of devils. If the employers could have foreseen what piece rates would lead to they would have thought the method the invention of the prince of devils.

The worker realized that this method of payment was wholly unnatural, that its tendency was naturally either to starve him or to wear him out with excessive toil.

Imagine a grower of flowers refusing to water his rosebushes or to give them sunlight unless they provided roses every day! Imagine a horse owner refusing to feed or water or shelter his horse except on a mileage basis. Imagine the worker having to assume all the risks of poor tools, break-downs of machinery, shortages of material and the other hundreds of impediments to full output!

This was not all. A normal, reasonable output of the spike machine, if everything worked right, might have been 3,750 an hour and \$2.50 may have been adequate and standard wages for the work, but the piece rate is based on an output of 2,500. The ambitious worker, by superhuman energy and endeavor, pushes his output for a few days or more up to 5,000. The employer considers this a proof that the maker of the machine was right in claiming a steady daily output of 5,000, so he cuts the price rate to 20 for one cent. The worker has the choice of acquiescing in a cut in pay, or for a 10 hour day of standardizing, an exertion so strenuous it ought not to be expected for more than 6 hours.

In the blind struggle against the rate cutting proclivity of the shop owner the worker unionizes and stands pat. Even if he knows that under good conditions 3,750 spikes is a fair day's work for a fair day's pay, he stands pat at 2,500, accepting \$2.50 as normal wage, working at depressingly slow speed for 10 hours and limiting output.

The objections to piece rate methods have come to be recognized by all the most intelligent and thorough investigators of working conditions and wage payment plans.

The chief objections to piece rates are both moral and practical:

- (1) Piece rates, the yard, the pound, the square foot, the gallon or bushel apply to materials. The work of man is not a material thing and is unphilosophically measured with material measures. The measure of a man's life is not his weight or his bulk, but what he produces as to quality in a given time.
- (2) Piece rates throw the responsibility of working conditions from the manager where they belong to the worker who is not responsible.
- (3) They deprive the worker of any certainty as to regular earning power, thus making it difficult, if not impossible, for him to standardize his manner of living.
- (4) They convert into a gamble, that fundamental fact as to his life, daily earning power.
- (5) They encourage individual overstrain as well as excessive exertion.
- (6) They stand in the way of variety of work and of promotion.
- (7) They encourage collective standing pat and block reasonable output.
- (8) They bring about bitter hostility and disagreement when changed conditions demand a change in rates, whether in the interest of worker or employer or of common sense and justice.
- (9) They encourage the employers to install what, under normal conditions, would be impracticable machines.
- (10) They encourage the workers to resist the introduction of new inventions and improvements.
- (11) They obscure, especially in the worker's mind, the rights of improved equipment and of improved materials to a share in the profits from reduced costs.

For instance, in a big railroad shop in 1905, the piece rate workers refused to permit any change in rates when the managers substituted high speed tools costing \$0.60 a pound, for the old carbon tools costing \$0.14 a pound or wheel lathes costing \$10,000.00 for the old lathes worth \$1,000.00 each, the new tools and machines, without any

extra exertion on the part of the worker, turning out five times as much work.

- (12) In a new shop and for new conditions it is almost impossible to set up reasonable and fair piece rates. Imagine the timid flights of the Wright Brothers put on piece rates twelve years ago! Under new conditions piece rates have to be abnormally high. If the rates stand, the shop owner is ultimately ruined. If the rates are continuously changed, great injustice is done the worker.

What has all this got to do with the recent railroad crises?

First this—American railroads have been brought into a very dangerous condition because very early in American railroad development the two mistakes were made of putting nearly all the revenues, as well as a considerable part of the operating expense, on a piece rate basis.

When railroads were started in England, they were influenced by stage coach precedents. They put the engineer behind the iron horse and called him a driver, they called the railroad car a coach or a van. They imitated the class distinction of the four-in-hand and then charged by the mile. Coach travel cost by the mile. There were no terminal charges, no road upkeep charges. It was a piece rate proposition, a price per mile proposition as to revenues. The great difference between horse coaches and railroads was overlooked. Probably 90 per cent of stage coach expenses, whether of capital investment or operation, lies in the coaches, horses and harness. Even in the modern railroad, in the United States, only 20 per cent of the capital and 20 per cent of the operating expense are in the moving trains. Classified passenger and classified freight rates based on distance are founded on one-fifth of the real cost. This is not all. The other four-fifths of the cost has been increasing steadily from the start. Yard expenses are increasing far more rapidly than road expenses. The cost of terminals is growing with the square of the population. What is more serious, both will continue to rise. Getting so much for nothing, both passengers and shippers congregate in the big cities and add still further to the congestion, to the increased cost of unremunerative railroading.

Every railroad man, every banker, every investor, every student of transportation knows that rates should be increased be-

cause the roads can no longer stand the drain of deferred obsolescence of unremunerative investments, especially in terminals.

Rates ought to be based on four elements and probably a fifth added.

The four basic elements are:

- (1) Cost of collecting the traffic
- (2) Cost of transporting the traffic
- (3) Cost of insurance or classification
- (4) Cost of delivering the traffic.

Only (2) and (3) now enter into rates. It is as cheap to arrive at New York at the Pennsylvania Station or at the New York Central Station as to drop from the train in Newark or Tarrytown. It is as cheap to ship freight to a New York dock as to unload it from the car at a country siding.

In the New York Subway the cost of (1), (3) and (4) sinks to a vanishing point and nothing is left but the flat cost of running trains and a flat revenue per passenger.

In steam railroad operation costs of both (1) and (4) are very great, but they are not directly made up by rates.

The fifth element that ought to govern charges is a principle that even frogs know all about, but which human beings operating railroads have not yet learned, namely to put on fat and expand when profits are high so as to accumulate a surplus to tide over the lean years. This fifth element is really included in (3) classification. Railroads now have different rates for different commodities, but \$1.80 a bushel wheat and \$0.20 cotton are not the same as \$0.50 wheat and \$0.05 cotton. The wheat raised at \$1.80 and the cotton grown at \$0.20 and iron at \$30.00 a ton can afford to pay rates that vary with the price.

Piece rates applied to traffic is the tuberculosis that is gradually but surely consuming our railroads.

Piece rates to employes was the next vicious departure from sound principles.

At first train employes were paid by the day. Long hours, either on the road or on sidings, worked great hardship. The trainmen unionized and succeeded in establishing an alternate mile and hour basis. If a train or locomotive man was called for duty, even if he never left the station, he received a full day's

pay. This was as it ought to be, and this principle ought to have been adhered to. But to it was tacked the piece rate of the mile. If a train or locomotive man made 100 miles it was then considered a day's work, even if made in two hours. The piece rate principle became firmly installed alongside of the hourly basis.

What was the result on railroad operation and costs?

Why is it that only in America do we see 120,000 pound cars and axle loads of 50,000 pounds?

Because operating costs included trainmen's wages, but not interest on capital invested in locomotives, cars, trains and terminals, railroad managers, driven by the need to make a showing, began to plan more revenue tons per train mile, in order to keep down or lessen train crew wage costs per revenue ton mile. This was very well as long as it led to full cars, full train loads, but the plan very soon expanded into heavier locomotives, heavier cars, then naturally followed heavier rails, more ties, tie plates, stronger bridges, reduced grades and realignments until all that was gained in tonnage mile costs was lost in increased obsolescence, unremunerative betterment and other fixed charges. Mr. E. H. Harriman was even led to regret that railroads had not been built on a gauge of 6 feet, instead of 4 feet 8½ inches, because he erroneously thought this would enable him still further to increase train load in proportion to train crew. The heavy equipment mania induced by trainmen's piece rate pay per mile has made it increasingly difficult to build new or branch lines, since each must have rails, road bed and bridges capable of carrying the 120,000 pound loads now so common.

In the automobile business this country fully realizes that fast running light cars cost less to operate per passenger mile, for fuel, for tires, for repairs, for obsolescence and for wear and tear on the road and that these economies offset the gain in drivers' wages unless the traffic is continuously very heavy.

It is a pity that the New York subway tracks are not 6 feet gauge, or even 7 feet, since the traffic is very heavy and very close. With heavy tonnage roads the present gauge of 4 feet 8½ inches is cheap to operate per ton mile, but very expensive where the traffic is thin. On the average for the whole United States tracks are occupied by moving trains only one per cent of the time. We could well afford a higher cost on the stretches of densest

traffic if thereby operating and maintenance costs were reduced on the feeding roads. It is, of course, too late to advocate any change from standard gauge in the United States, but the tyranny of tradition has extended its blight to Alaska, to the Philippines, to Cuba, to Porto Rico.

With greater realization, Tasmania and New Zealand have built narrow gauge roads of very great capacity. Pipe lines have been very effective because they do not waste any power transporting the containers, and the road and track are occupied continuously to 100 per cent capacity. The nearer railroads could have approximated to this, yet preserved the essentials of convenience, comfort and speed, the better they would have been.

Railroad shop piece rates suffer from all the evils of the worst application of piece rates. They result in unfair costs 50 per cent higher than they should be without benefit to the employes who for less effort could be paid higher hourly rates than they now earn, yet with much lower unit costs for the railroad company.

Piece rates to trainmen should be abolished. The work of trainmen should be classified. There should be short hours and correspondingly high pay for men working under great strain. There should be heavy penalties attached for overtime, although it does not follow that the man who puts in the overtime should receive the penalty. Society wants him to protest against overtime, because it may be both dangerous to the public and detrimental to the worker. The worker should not be bribed to encourage it.

It is evident that pay by the hour with penalties for overtime would encourage lighter and faster trains. Lighter and faster trains would increase the roads' capacity as well as car and locomotive mileage. Capital Expenses per car and locomotive mile would drop. The savings made would be available to increase wages, to pay higher bills for material and to pay better dividends.

The third use of piece rates is as interest on bonds. The bond holder receives a piece rate per thousand dollars without reference to the earning power of the road. If bonds and shares were married together it would be different. The bond interest would constitute the fixed normal return and the increasing dividends on shares would be a bonus for good conduct and the passing of dividends would be the penalty for unfavorable operation.

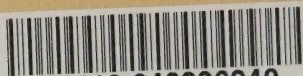
Dividends would be the dessert following a regular dinner. But under our method, bonds and shares are divorced, some of the children receive regular dinner without dessert and others, receiving no regular dinner, get dessert or go without. This is bad for both sets of children. It is a catastrophe of the first magnitude for an investment railroad in which the funds of the superannuated, the dependent, are invested, to pass all dividends. It is not only always evidence of bad financing or of bad management, but it also encourages the rapacious and predatory few at the expense of the many to reap where they did not sow.

These three forms of piece rates: revenues on mileage basis, wages on mile or piece basis, money on flat interest basis, are gradually undermining even our strongest railroads.

Revenues should be based on the five chief elements of cost, not on two. Compensation should be based on time with added increments for varying conditions. Capital investments should be conserved by whatever name called. The four great rules of correct railroading should always be observed.

- (1) Use sensible and suitable units;
- (2) Do not overinvest;
- (3) Standardize costs of maintenance and operation and resolutely attain them;
- (4) Use each unit to the rational limit.

Show me a railroad observing these four rules and I will show you a well managed road.



3 0112 043226940